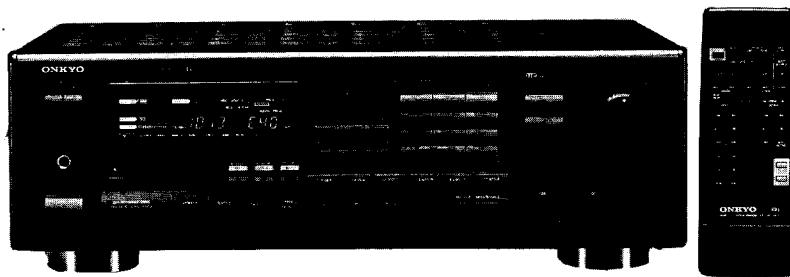


ONKYO SERVICE MANUAL

QUARTZ SYNTHESIZED TUNER AMPLIFIER MODEL TX-905



Black model

BHMD, BHMDN, BHMDC

120V AC, 60Hz

SAFETY-RELATED COMPONENT WARNING!!
COMPONENTS IDENTIFIED BY MARK Δ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.
MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

TABLE OF CONTENTS

Specifications.....	2
Service procedures.....	3
Exploded view.....	4
Parts list.....	5
Block diagram.....	6
Microprocessor descriptions.....	8
IC block diagram and descriptions.....	11
Adjustment procedures.....	20
Printed circuit board views.....	23
Printed circuit board -parts list.....	29
Schematic diagram.....	33
Packing view.....	42

ONKYO
AUDIO COMPONENTS

SPECIFICATIONS

AMPLIFIER SECTION

Power Output:	Stereo mode 60 watts per channel min. RMS. at 8 ohms, both channels driven, from 20Hz to 20,000Hz, with no more than 0.08% total harmonic distortion.
	Multi source mode 55 watts per channel min. RMS. at 8 ohms both channels driven, from 20Hz to 20,000Hz, with no more than 0.08% total harmonic distortion. (FRONT) 12 watts per channel min. RMS. at 8 ohms 1,000Hz with no more than 0.8% total harmonic distortion. (REMOTE)
Total Harmonic Distortion:	0.08% at rated power (FRONT)
IM distortion:	0.08% at rated power (FRONT)
Damping Factor:	60 at 8 ohms (FRONT)
Sensitivity and Impedance:	Phono: 2.5mV/50 kohms CD/Tape Play: 150mV/50 kohms Tape Rec: 150mV/2.2 kohms
Phono Overload:	120mV RMS. at 1,000 Hz, 0.08% THD.
Frequency Response:	20 to 30,000 Hz, +/- 1 dB
RIAA Deviation:	20 to 20,000 Hz, +/- 0.8 dB
Tone Control:	BASS: +/-10 dB at 100 Hz TREBLE: +/-10 dB at 10,000 Hz
Signal to Noise Ratio:	PHONO: 80 dB (IHF A, 5mV input) CD/TAPE: 100 dB (IHF A)
Muting:	- ∞ dB

VIDEO SECTION

Signal sensitivity and impedance
VDP/VCR normal input, output: 1 Vp-p, 75 ohms

TUNER SECTION

FM:

Tuning Range:	87.5 – 108.0MHz (100kHz steps)
Usable Sensitivity:	Mono: 11.2dBf, 2.0μV Stereo: 17.2dBf, 4.0μV
50dB Quieting Sensitivity:	Mono: 17.2dBf, 4.0μV Stereo: 37.2dBf, 40μV
Capture Ratio:	1.5dB
Image Rejection Ratio:	40dB
IF Rejection Ratio:	90dB
Signal-to-Noise Ratio:	Mono: 73dB Stereo: 67dB
Alternate Channel Attenuation:	55dB
AM Suppression Ratio:	50dB
Harmonic Distortion:	Mono: 0.15% Stereo: 0.25%
Frequency Response:	30 – 15,000Hz ±1.5dB
Stereo Separation:	45dB at 1kHz/30dB at 100 – 10,000Hz
Muting Level:	17.2dBf, 4μV

AM:

Tuning Range:	530 – 1710kHz (10kHz steps)
Usable Sensitivity:	30μV
Image Rejection Ratio:	40dB
IF Rejection Ratio:	40dB
Signal-to-Noise Ratio:	40dB
Harmonic Distortion:	0.7%

GENERAL

Power Supply:	AC120V, 60Hz
Dimensions (W x H x D):	455 x 150 x 331.5 mm 17-15/16" x 5-7/8" x 13-1/16"
Weight:	9.7 kg, 21.4 lbs

Specifications and features are subject to change without notice.

SERVICE PROCEDURES

1. Replacing the fuses

For continued protection against fire hazard, replace only with same type and same rating fuse.

Circuit no. Part no. Description

F901 252051 \triangle 6A ST-6,Primary fuse
F904,F905 252051 \triangle 6A ST-6,Secondary fuse

2. Change of FM/AM band step.

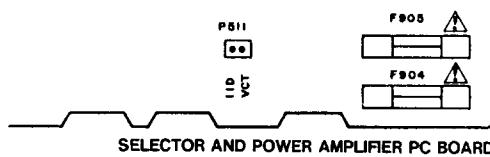
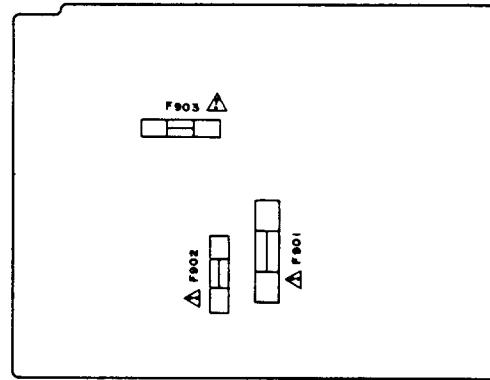
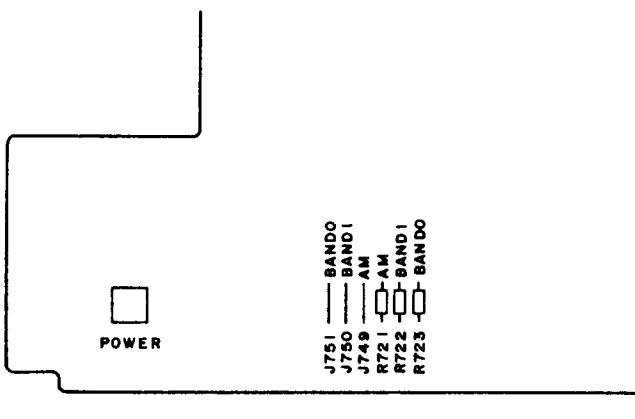
(FM)

BAND STEP	R723	J751
100kHz→50kHz	Addition	Open
50kHz→100kHz	Eliminated	Short

(AM)

BAND STEP	R721	J749
10kHz→ 9kHz	Eliminated	Short
9kHz→10kHz	Addition	Open

In R721 and R722 Carbon resistor 100k Ω (Part No.417341044) are used.



3. Memory preservation

This unit does not require memory preservation batteries. A built-in memory power back-up system preserves contents of the memory during power failures and even when the unit is unplugged. The unit must be plugged in and the power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory the power switch must be turned on and off a few times each month to keep the back-up system operative. The period of time during which memory contents are preserved after power has last been turned off varies depending on climate and placement of the unit. On the average, memory contents are protected over a period of 3 to 4 weeks (a minimum of 2 weeks) after the last time power has been turned off. This period is shorter when the unit is exposed to very high humidity or used in an area with an extremely humid climate.

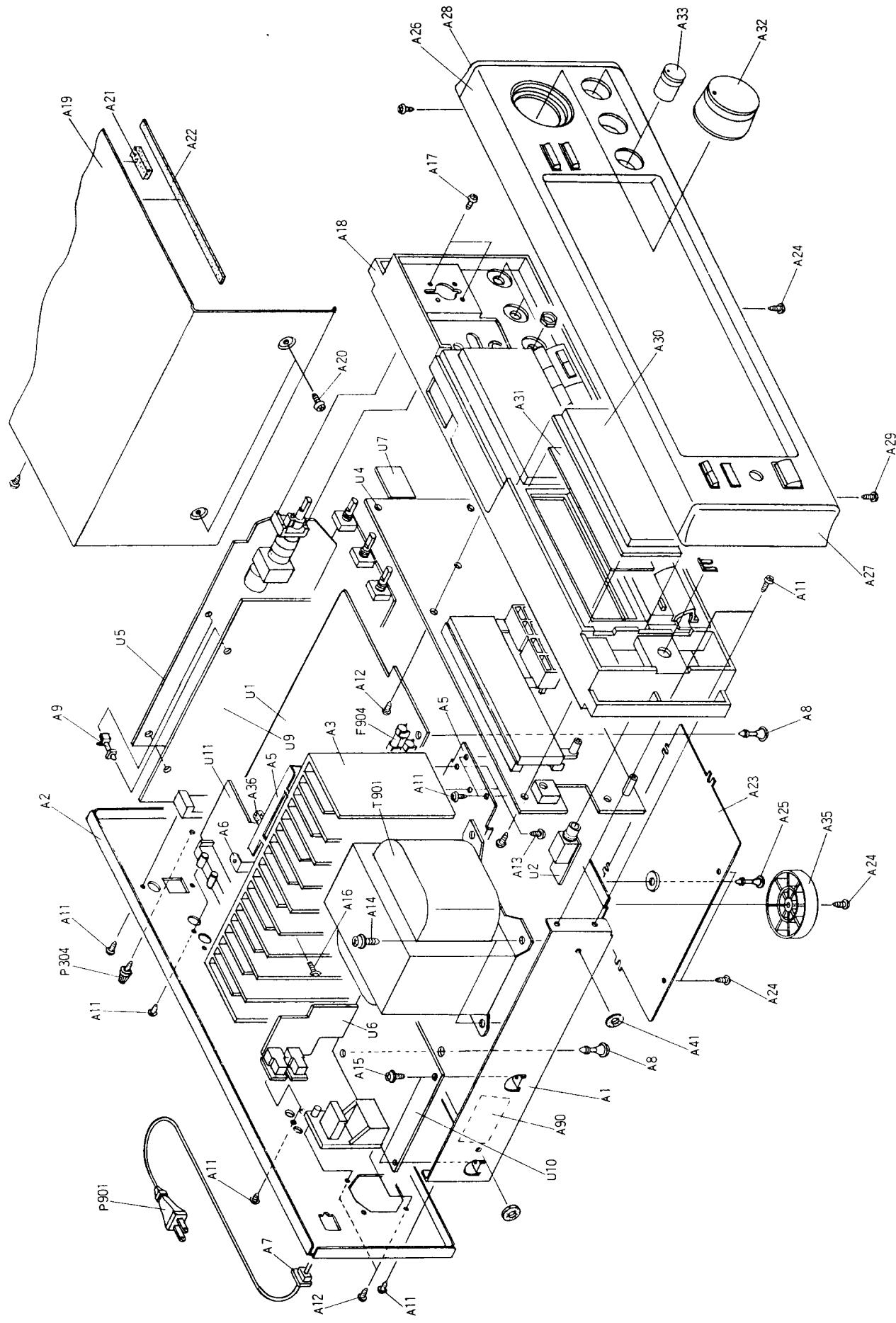
4. Safety-check out

(Only U.S.A. model)

After correcting the original service problem perform the following safety check before releasing the set to the customer.

Connect the insulating-resistance tester between the plug of power supply cord and terminal GND on the back panel. Specifications: 3.3 Mohm $\pm 10\%$ at 500V.

EXPLoded VIEW

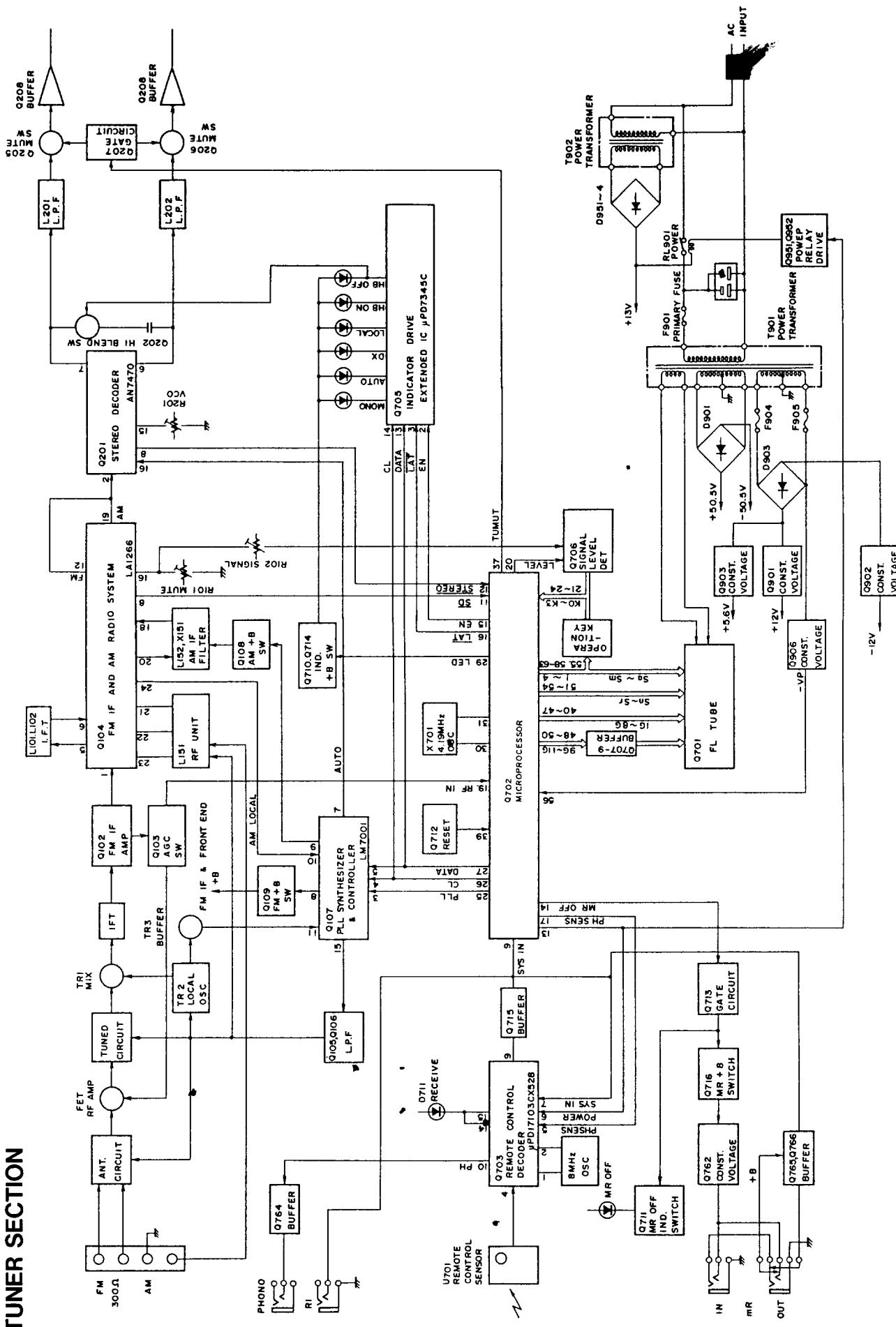


PARTS LIST

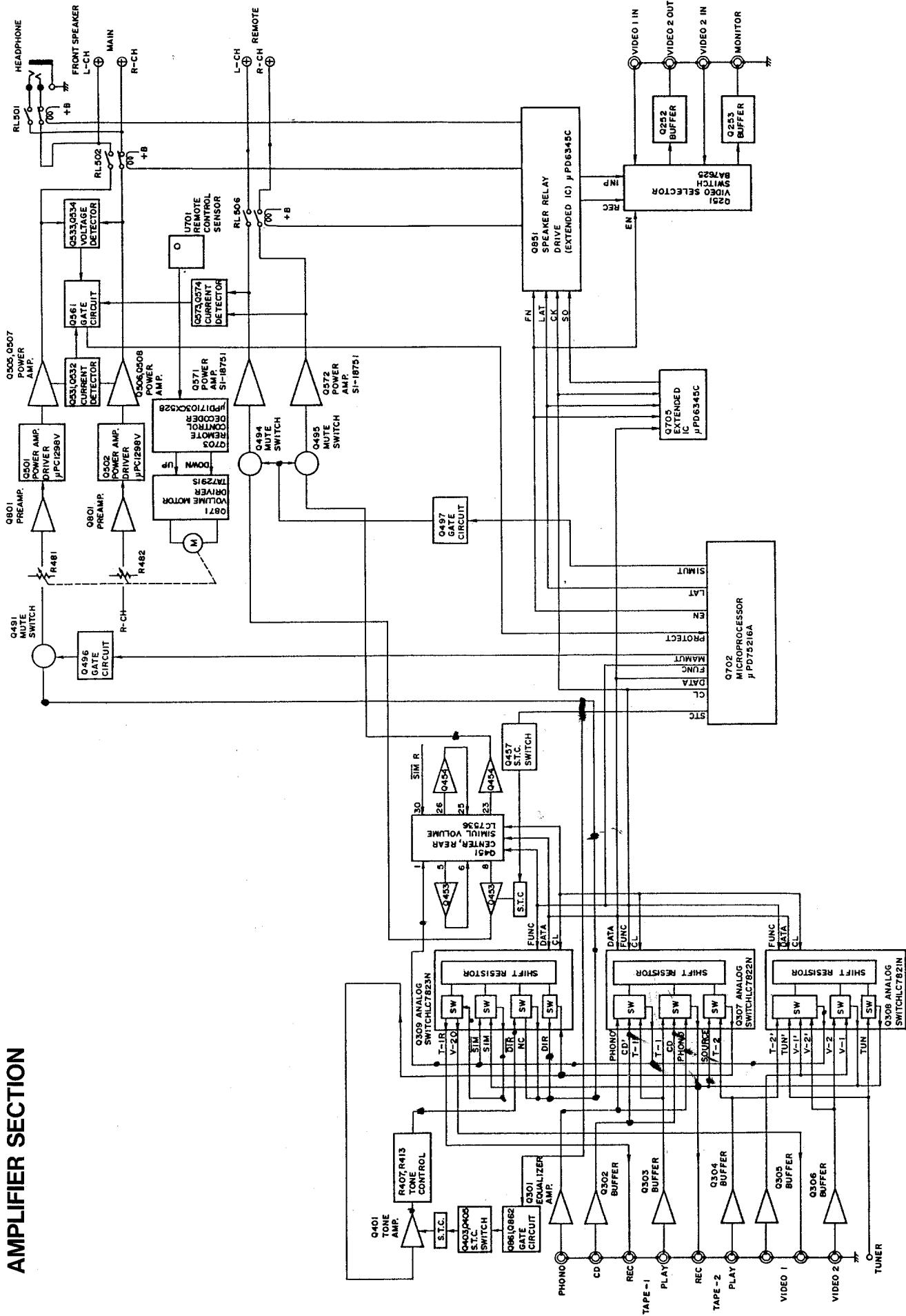
REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A1	27100239AY	Chassis	F901	252051	△ 6A ST-6,Primary fuse
A2	27121649Y	Back panel	F904	252051	△ 6A ST-6,Secondary fuse
A3	27160287	Radiator	F905	252051	△ 6A ST-6,Secondary fuse
A4	2714147AY	Bracket SH	F905b	29360626-1	Rating label,fuse
A5	27130653Y	Bracket H	JL.701	2041322010	NCFC1-322010,Flat cable
A6	27141498Y	Bracket S	P304	25060044	Terminal GND
A7	27300750	△ Bushing	P901	253163Y or	△ AS-UC-6 #18,
A8	27190657	KGLS-18RT,Holder		253174Y	△ Power supply cord
A9	27190062	KGLS-12S,Holder	Q505,Q506	2202528,	2SC4468-Y(ONK),
A10	801433	3SMS10W,SW+14B(BC),Sems self-tapping screw		2202529 or	2SC4468-P(ONK) or
A11	834430088	3TTTS+8B(BC),Self-tapping screw	Q507,Q508	2202518,	2SC3182N-O,Power amplifier transistors
A12	833430080	3TTP+8B(BC),Self-tapping screw		2202293	2SA1695-Y(ONK),
A13	834430108	3TTTS+10B(BC),Self-tapping screw		2202519 or	2SA1695-P(ONK) or
A14	830440089	4TTTC+8C(BC),Self-tapping screw	T901	2300674	△ NPT-1112D,Power transformer
A15	831130088	3TTW+8B,Self-tapping screw			NAAF-4187-6,Selector and power amplifier pc board ass'y
A16	82143015	3P+1.5FN(BC),Pan head screw	U1	1A398587-6	NAETC-4188-6,Headphone terminal pc board ass'y
A17	82143006	3P+6FN(BC),Pan head screw	U2	1A398588-6	NADIS-4189-6,Display circuit pc board ass'y
A18	27110734Y	Front bracket ass'y	U4	1A398589-6	NAAF-4190-6,Volume circuit pc board ass'y
A19	28184476AY	Top cover	U5	1A398590-6	NADG-4191-6,RJ/MR terminal pc board ass'y
A20	834430088	3TTTS+8B(BC),Self-tapping screw	U6	1A398591-6	NASW-4192-6,Operation switch pc board ass'y
A21	28140020	4×10×40,Cushion	U7	1A398592-6	NARF-4194-6,Tuner circuit pc board ass'y
A22	28141132	6×60×40,Cushion	U9	1A398594-6	NARF-4194-6,Tuner circuit pc board ass'y
A23	27170280AY	Bottom panel	U10	1A398595-6	NAPS-4195-6,Power supply circuit pc board ass'y
A24	834430088	3TTTS+8B(BC),Self-tapping screw	U11	1A398596-6	NAAF-4196-6,Video and sub amplifier pc board ass'y
A25	27190657	KGLS-18RT,Holder			
A26	1A398701K	Front panel ass'y			
A27	28125234BY	End cap L			
A28	28125235BY	End cap R			
A29	833430080	3TTP+8B(BC),Self-tapping screw			
A30	28191596A	Clear plate			
A31	28133262Y	Back plate			
A32	28324372	Knob VOLUME			
A33	28324376A	Knob TONE			
A35	27175251 or	Leg			
	27175251-1	Leg			
A36	28140546	0.5×390×10,Cushion			
A38	27141474A	Bracket,shield			

NOTE: THE COMPONENTS IDENTIFIED BY MARK \triangle
ARE CRITICAL FOR RISK OF FIRE AND
ELECTRIC SHOCK. REPLACE ONLY WITH
PART NUMBER SPECIFIED.

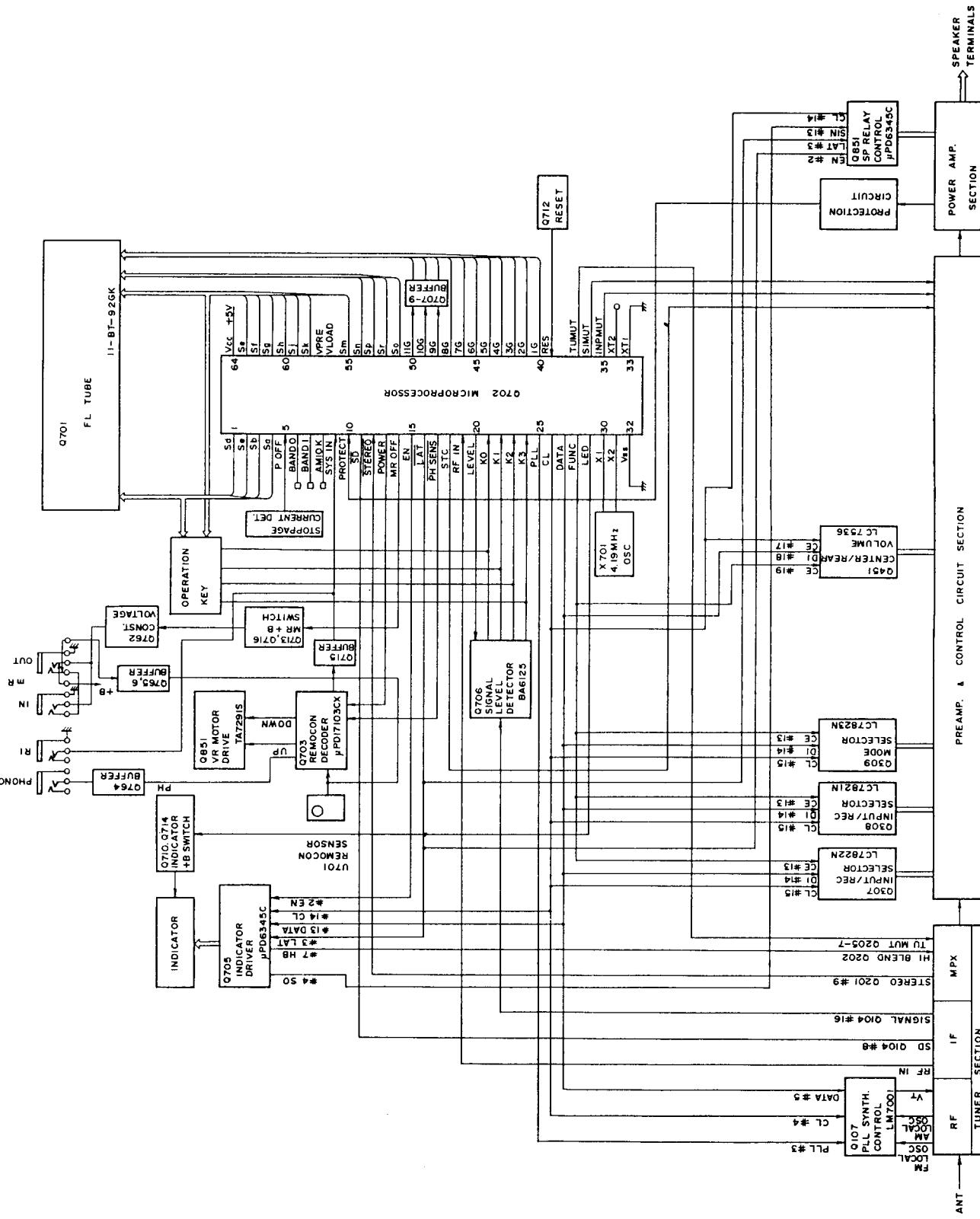
BLOCK DIAGRAM TUNER SECTION



AMPLIFIER SECTION



MICROPROCESSOR DESCRIPTIONS



Terminal Description

Pin No.	Symbol	Description												
1	Sd													
2	Sc	Segment and key scan output terminals.												
3	Sb	"H" when active.												
4	Sa													
5	POFF	This is the input terminal for detection of the stoppage of electric current."L" when the stoppage of electric current.												
6	BAND0	Initializing input terminal for region setting of FM band.												
7	BAND1													
8	AM 10K	Initializing input terminal for region setting of AM band.												
9	SYS IN	System code input terminal."H" when active.												
10	PROTECT	Protection circuit operation detection input terminal. "H" when active.												
11	SD	Broadcast detection input terminal."L" when active. Control the stop of auto tuning and output TU MUT(#37).												
12	STEREO	Stereo broadcast detection input terminal. "L" when stereo broadcast.												
13	POWER	Power control output terminal."H" when the power turns on.												
14	MR	MR control output terminal. "H" when MR turns on.												
15	EN	Connect the terminal EN of the extended IC μ PD6345C.(Q705,Q851)												
16	LAT	Connect the terminal LAT of the extended IC μ PD6345C.												
17	PHONO	Phono control output terminal.												
18	S.TONE	SELECTIVE TONE control output terminal. "H" when this switch turns on.												
19	RF IN	RF mode input terminal. <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>RF IN</td><td>RF MODE</td></tr> <tr><td>L</td><td>LOCAL</td></tr> <tr><td>H</td><td>DX</td></tr> </table> Control the terminals LOCAL and DX of the extended IC.	RF IN	RF MODE	L	LOCAL	H	DX						
RF IN	RF MODE													
L	LOCAL													
H	DX													
20	LEVEL	Signal level input control output terminal.The signal level is inputed to terminals K0-K3 when this terminal is the high level.												
21	K0	Key scan input terminals when pin 20 is low."H" when active.												
22	K1	Signal level input terminal when pin 20 is high.												
23	K2													
24	K3	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>Key input of L</td><td>Signal level</td></tr> <tr><td>none</td><td>LEVEL0</td></tr> <tr><td>K0</td><td>LEVEL1</td></tr> <tr><td>K0,K1</td><td>LEVEL2</td></tr> <tr><td>K0,K1,K2</td><td>LEVEL3</td></tr> <tr><td>K0,K1,K2,K3</td><td>LEVEL4</td></tr> </table>	Key input of L	Signal level	none	LEVEL0	K0	LEVEL1	K0,K1	LEVEL2	K0,K1,K2	LEVEL3	K0,K1,K2,K3	LEVEL4
Key input of L	Signal level													
none	LEVEL0													
K0	LEVEL1													
K0,K1	LEVEL2													
K0,K1,K2	LEVEL3													
K0,K1,K2,K3	LEVEL4													
25	PLL	Connect to the terminal CE of PLL IC (LM7001 Q107).												
26	CL	Connect to the terminal CL of PLL IC,terminal CL of analogue switches(Q307,308, Q309,Q601,Q692),terminal SECK of digital delay (Q661) and terminal CLK of electro volume. (Q451)												
27	DATA	Connect to the terminal DATA of PLL IC,terminal DI of analogue switches,terminal SEDATA of digital delay,terminal SIN of extended IC and terminal CLK of electro volume. (Q451)												

FM band setting

BAND1	BAND0	REGION	FREQUENCY RANGE	CH. SPACE
0	0	U.S.A.	87.5-108.0MHz	50kHz
0	1	Europe	87.50-108.00MHz	50kHz
1	0	Saudi Arabia	87.50-108.00MHz	50kHz
1	1	Japan	76.0-90.0MHz	100kHz

AM band setting

AM10K	REGION	FREQUENCY RANGE	CH. SPACE
1	U.S.A.	530-1710kHz	10kHz
0	Saudi Arabia	531-1602kHz	9kHz
0	Europe	522-1611kHz	9kHz

Pin No.	Symbol	Description
28	CE	Connect to the terminal CE of analogue switches and terminal CE of electro volume.
29	LED	LED indicator control output terminal.
30	X1	Ceramic oscillator connection terminal for main system clock.
31	X2	Connect to the 4.19MHz ceramic oscillator.
32	VSS	Ground terminal.
33	XT1	Ceramic oscillator connection terminal for sub system clock.
34	XT2	Not used.
35	INP MUT	Audio muting output terminal when input selector change over.
36	SIM MUT	SIM muting output terminal when input selector change over.
37	TU MUT	Tuner muting output terminal."H" when active.
38	REQ/MODE	Connect to the terminal REQ of digital delay.
39	RESET	Reset input terminal."L" when active.
40	D1	
41	D2	
42	D3	
43	D4	
44	D5	Digit output terminals."H" when active.
45	D6	
46	D7	
47	D8	
48	D9	
49	D10	
50	D11	
51	So	
52	Sr	
53	Sp	Segment output terminals."H" when active.
54	Sn	
55	Sm	
56	VLOAD	Pull-down resistor connection terminal of FIP controller/driver.
57	VPRE	Power supply terminal of output buffer of FIP controller/driver.
58	Sk	
59	Sj	
60	Sh	Segment and key scan output terminals. "H" when active.
61	Sg	
62	Sf	
63	Se	
64	VDD	Power supply terminal.(+5V)

Key Matrix

No.	24	23	22	21	
No.	K3	K2	K1	K0	
4	Sa	SLEEP	SPEAKER REMOTE	SPEAKER MAIN	POWER
3	Sb	DELAY TIME	SURROUND MODE	CENTER MODE	MR
2	Sc	TAPE-2	TAPE-1	VIDEO-2	VIDEO-1
1	Sd	CD	PHONO	AM	FM
63	Se		S.DIRECT	SIM	REC OUT
62	Sf	4	3	2	1
61	Sg	8	7	6	5
60	Sh	CLASS SCAN	D.TUNING	0	9
59	Sj	UP	DOWN	MEMORY	MUTE/MODE
58	Sk	CLASS-D	CLASS-C	CLASS-B	CLASS-A
55	Sm	CENTER OFF	SELECTIVE TONE	CLASS-F	CLASS-E

ADJUSTMENT PROCEDURES

● Preparation

1. Input

FM mono: 1kHz, 75kHz devi., 60dB/ μ V
 FM stereo: 1kHz, 75kHz devi., 60dB/ μ V
 Pilot signal 19kHz 7.5kHz devi.

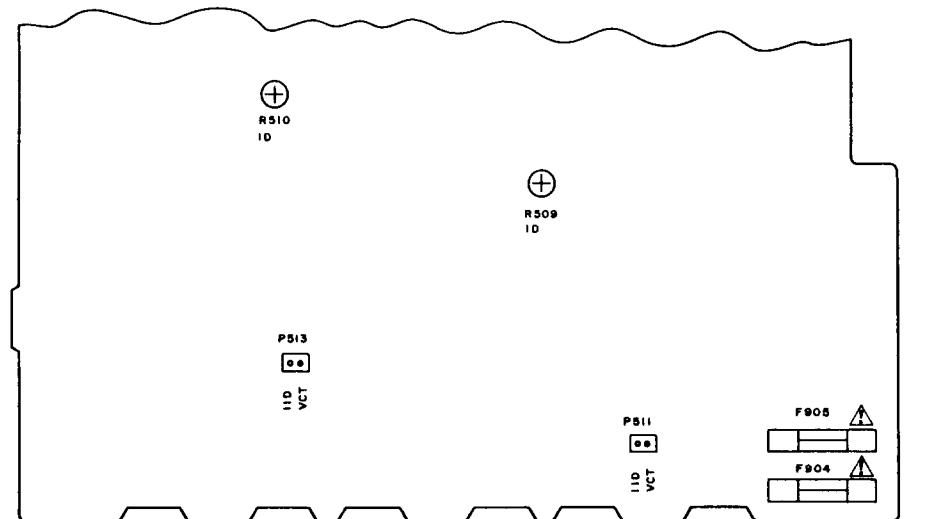
AM: 400Hz 30% mod.

2. Outputs

Connect the non-inductive type resistors of 8ohms to the main speaker, remote speaker, and rear speaker terminals unless otherwise noted.

3. Standard Knob Position

TAPE MONITOR 2	.....	OFF
VOLUME	.....	Maximum
BASS/TREBLE/BALANCE/INPUT		
BALANCE	.....	Center
MUTING	.....	OFF
REC SELECTOR	.....	SOURCE
INPUT SELECTOR	.....	CD
SPEAKERS	.....	ON
S.T.C.	.....	OFF



SELECTOR AND POWER AMPLIFIER PC BOARD

Amplifier section

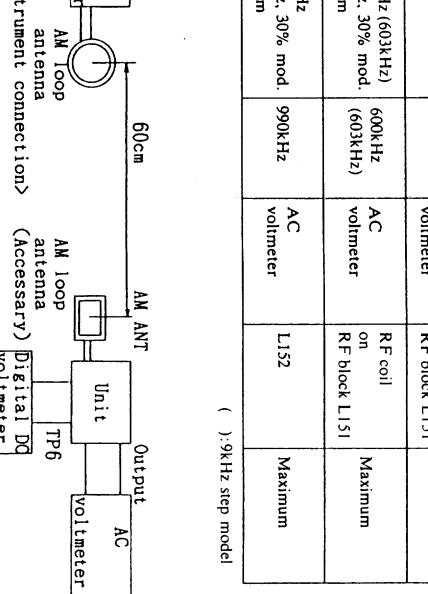
Idling Current Adjustment

Connect the DC voltmeter to the terminals IID and VCT on the pre., and main amplifier pc board. Adjust the semi-fixed resistors R509, and R510 so that indication of voltmeter is 5 ± 0.5 mV.

NOTE: Adjust after switching on for 5 minutes.

Step	Connection	FM SG output	Stereo modulator output	Tuning frequency	Output indicator	Adjustment point	Adjust for	Remarks
1		99.1MHz 1kHz, 75kHz devi. 65dBf (60dB)		DC voltmeter	L101	0±20mV		FM MUTE/MODE switch: ON/STEREO
2	Fig. 1			AC voltmeter		IFT on the front end	Maximum	Repeat the steps 1 and 3 until no further adjustment is necessary.
3				Distortion analyzer	L102	Minimum		
	Fig. 2	99.1MHz 1kHz, 75kHz devi. 65dBf (60dB)	99.1MHz	Frequency counter	R201	19kHz±10Hz		
	Fig. 3	99.1MHz, Ext mod., 65dBf (60dB)	Channel L or R 1kHz	Distortion analyzer		IFT on the front end	Minimum	Don't turn more than ±180°
1	Fig. 3	99.1MHz Ext. modulation 65dBf (60dB)	Channel L 1kHz	Channel R AC voltmeter		Minimum		
2		99.1MHz 17.2dBf (14.8dB 120V model) 19.2dBf (14.8dB Other model)	Channel R 1kHz	Channel L AC voltmeter	R202	Minimum		
	Fig. 3	99.1MHz 35dBf (30dB 120V model) 33dBf (28dB Other model)	99.1MHz	AUTO indicator	R101	Light on		
	Fig. 3			4th Signal indicator	R102	Light on		

dition



(): 9kHz step model

Confirmation of tuned voltage

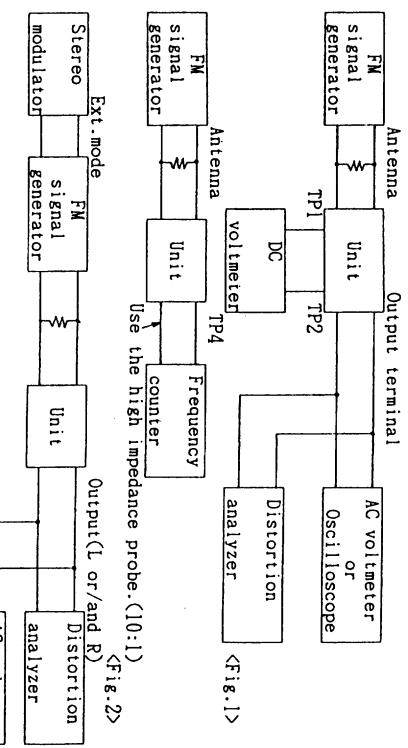
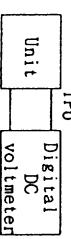


Fig. 1

Fig. 2

Fig. 3

PRINTED CIRCUIT BOARD PARTS LIST

CAUTION: Replacement for transistor of mark \star , if must be made from the same beta group (HI original type).

SELECTOR AND POWER AMPLIFIER PC BOARD (NAAF-4187-6)

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
		ICs			Capacitors
Q301	22240191	NJM4565D-D	C303,C304	354780229	2.2 μ F,50V,Elect.
Q302-Q306	22240247	BA15218N	C307,C308	354721019	100 μ F,6.3V,Elect.
Q307	22240270	LC7822N	C309,C310	374726224	6200pF \pm 5%,50V,Plastic
Q308	22240280	LC7821N	C311,C312	374721824	1800pF \pm 5%,50V,Plastic
Q309	22240339	LC7823N	C313,C314	354761009	10 μ F,35V,Elect.
Q401,Q402	22240247 or 22240293	BA15218N or NJM4558L-D	C315,C316	354744709	47 μ F,16V,Elect.
Q501,Q502	22240311	μ PC1298V	C401,C402	354761009	10 μ F,35V,Elect.
Q801	22240247	BA15218N	C403,C404	354744709	47 μ F,16V,Elect.
Q851	22240211	μ PD6345C	C405,C406	374721534	0.015 μ F \pm 5%,50V,Plastic
Q901	222780122NEC	78M12	C409,C410	374721534	0.015 μ F \pm 5%,50V,Plastic
Q902	222790125	79M12	C413-C416	374721044	0.1 μ F \pm 5%,50V,Plastic
Q903	222780565JRC	78M56	C417-C420	374721024	1000pF \pm 5%,50V,Plastic
		Transistors	C441,C442	354761009	10 μ F,35V,Elect.
Q403-Q406	2211945	2SK246-GR	C491,C492	354761009	10 μ F,35V,Elect.
Q491-Q494	2213631 or 2213632	RN1241-A or RN1241-B	C501,C502	354761009	10 μ F,35V,Elect.
Q496,Q497	2213510	DTA114ES	C507,C508	354742219	220 μ F,16V,Elect.
Q503,Q504	2213284	2SC1740S-R	C513,C514	374726834	0.068 μ F \pm 5%,50V,Plastic
Q505,Q506	2202528, 2202529 or 2202293	\star 2SC4468-Y(ONK), \star 2SC4468-P(ONK) or \star 2SC3182N-O	C515,C516	374724734	0.047 μ F \pm 5%,50V,Plastic
Q507,Q508	2202518, 2202519 or 2202283	\star 2SA1695-Y(ONK), \star 2SA1695-P(ONK) or \star 2SA1265N-O	C517-C520	354700109	1 μ F,160V,Elect.
Q531-Q534	2211732 or 2211733	2SC1845-F or 2SC1845-E	C533,C851	354721019	100 μ F,6.3V,Elect.
Q561	2211792 or 2211793	2SA992-F or 2SA992-E	C801,C802	354761009	10 μ F,35V,Elect.
Q861,Q905	221282	DTC144ES	C905,C906	3504245	8200 μ F,50V,Elect.
Q862	2213510	DTA114ES	C909,C910	3504213	4700 μ F,35V,Elect.
Q904	2213830	DTB113ZS	C913,C914	354761009	10 μ F,35V,Elect.
Q906	2213354	2SA933S-R	C915	354751029	1000 μ F,25V,Elect.
		Diodes	C917	354761009	10 μ F,35V,Elect.
D401-D404	223163 or	1SS133 or	C918	354761019	100 μ F,35V,Elect.
D501,D502	223205	1SS270A	C919	354781019	100 μ F,50V,Elect.
D561	224450512	MTZ5.1B	C921	354754719	470 μ F,25V,Elect.
D851,D905	223163 or 223205	1SS133 or 1SS270A			Resistors
D901	22380038	RBV602	R393	5104225	N11RLC250KWT22Z,Variable
D903	22380048	RBA402	R407,R408	5104230	N14RLC100KWT22Z,Variable
D904,D906	22380032, 22380035 or	1SR139-100, GP104003E or	R413,R414	5104230	N14RLC100KWT22Z,Variable
D908,D909	22380046	AM01Z	R509,R510	5210261	N06HR 5KBC,Semi-fixed
D907	224451302	MTZ13B	R515,R516	442520824	8.2 Ω \pm 5%,1/2W,Metal oxide film
D910	224452704	MTD27D	R517,R518	441620824	8.2 Ω \pm 5%,1W,Metal oxide film
D911,D912	223163 or	1SS133 or	R519,R520	4500031	0.22 Ω ,5W,Metal plate
D991-D994	223205	1SS270A	R521,R522	442520824	8.2 Ω \pm 5%,1/2W,Metal oxide film
		Coils	R523,R524	441620824	8.2 Ω \pm 5%,1W,Metal oxide film
L501,L502	231176	S-1.3C	R902	441524794	0.47 Ω \pm 5%,1/2W,Metal oxide film
			R903	442523304	33 Ω \pm 5%,1/2W,Metal oxide film
			R906	441721804	18 Ω \pm 5%,2W,Metal oxide film
			R907	441721514	150 Ω \pm 5%,2W,Metal oxide film
			R908	442524704	47 Ω \pm 5%,1/2W,Metal oxide film
			R911	442523314	330 Ω \pm 5%,1/2W,Metal oxide film
			R912	442522204	22 Ω \pm 5%,1/2W,Metal oxide film
			R913	442524794	0.47 Ω \pm 5%,1/2W,Metal oxide film

NOTE: <D>: Only 120V model
<P>: Only 230V/240V models
<W>: Only Worldwide model

NOTE: THE COMPONENTS IDENTIFIED BY MARK **A** ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	Relaies			Diodes	
RL501	25065396	NRL-2P1.25A-DC24-067	D701,D702	224450623	MTZ6.2C
RL502	25065339	NRL-2P5A-DC24-046	D713	223163 or	1SS133 or
	Terminals		D715-D738	223205	1SS270A
P301-P303	25045300	NPJ-6PDBL159	D740-D742	223163 or	1SS133 or
P501	25060159	NTM-8PDMN085	D744-D748	223205	1SS270A
	Plugs		D743,D762	224450562	MTZ5.6B
P201	25055502	NPLG-16P477	D752-D754	223163 or	1SS133 or
P491	25055583	NPLG-7P554	D758	223205	1SS270A
P511,P512	25055493	NPLG-2P468		Coil	
P601	25055496	NPLG-4P471	L701	233411K220	NCH-1387
P602	25055500	NPLG-12P475		Ceramic oscillators	
P603	25055499	NPLG-10P474	X701	3010163	CST4.19MGW
	Socket		X702	3010154 or	CST8.00MT or
JL701a	25050727	NSCT-30P531		3010190	CST8.00MTW
	Fuses			Capacitors	
F904,F905	252051	A 6A ST-6	C701	353780109	1 μ F,50V,Elect.
	Fuseholders		C703,C704	353741009	10 μ F,16V,Elect.
F904a,F905a	250113	A SN5051	C705	353780109	1 μ F,50V,Elect.
	Clamp		C707	375524744	0.47 μ F \pm 5%,50V,Plastic
P991	260224	CP-1S	C708	3000057	0.1F,5.5V,Super
			C710	353780109	1 μ F,50V,Elect.
HEADPHONE TERMINAL PC BOARD (NAETC-4188-6)			C711	353721019	100 μ F,6.3V,Elect.
CIRCUIT NO.	PART NO.	DESCRIPTION	C715	353780109	1 μ F,50V,Elect.
P504	25045255	YKB21-5009,Terminal,headphone		Switches	
			S701-S703	25035548	NPS-111-S510
DISPLAY CIRCUIT PC BOARD (NADIS-4189-6)			S705	25035548	NPS-111-S510
CIRCUIT NO.	PART NO.	DESCRIPTION	S709-S718	25035548	NPS-111-S510
	ICs		S721-S742	25035548	NPS-111-S510
Q702	<u>22240624</u>	μ PD75212ACW-A30		Socket	
Q703	22240466	μ PD17103CX-531	JL701b	25050728	NSCT-30P532
Q705	22240211	μ PD6345C		Plug	
Q706	22240341	BA6125	P702b	25055512	NPLG-5P487
	FL tube			Holders	
Q701	212115	11-BT-107GK	Q702a	27190842	LED 9
	Transistors		D711a	27190843	LED 1
Q707-Q709	2213284	2SC1740S-R			
Q710-Q712	221282	DTC144ES	VOLUME CIRCUIT PC BOARD(NAAF-4190-6)		
Q713	2213640	DTC123JS	CIRCUIT NO.	PART NO.	DESCRIPTION
Q714,Q716	2213830	DTB113ZS		ICs	
Q715	2213510	DTA114ES	Q451	22240468	LC7536
	Opto. receiving module		Q453,Q454	22240247 or	BA15218N or
U701	24130003	GP1U50XS		22240293	NJM4558L-D
	L.E.Ds		Q871	22240239	TA7291S
D705	225137CG,	SEL2413E-CG,		Diode	
D707,D709	225137DG or	SEL2413E-DG or	D871	223163 or	1SS133 or
	225137DY	SEL2413E-DY		223205	1SS270A
D706,D708	225142	SEL2913K		Sockets	
D710-D712	225142	SEL2913K	P612	2000589A	NSAS-6P545
			P601a	25050443	NSCT-4P267
			P602a	25050447	NSCT-12P271
			P603a	25050446	NSCT-10P270

NOTE: <D>: Only 120V model
 <P>: Only 230V/240V models
 <W>: Only Worldwide model

NOTE: THE COMPONENTS IDENTIFIED BY MARK  ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors			Diodes	
C451,C452	354780229	2.2 μ F,50V,Elect.	D101,D102	223132	1K60
C457,C458	354761009	10 μ F,35V,Elect.	D103	224450512	MTZ5.1B
C459,C460	354780229	2.2 μ F,50V,Elect.	D201,D202	223163 or	ISS133 or
C461,C462	354761009	10 μ F,35V,Elect.	D205-D207	223205	ISS270A
C467,C468	354744709	47 μ F,16V,Elect.			Coils and transformers
C871	354721019	100 μ F,6.3V,Elect.	L101	233401	NFIF-4072
	Resistor		L102	233402	NFIF-4073
R481,R482	5142006A	N16RGL100KBT25F,Variable	L103	233411M022	NCH-1375
RI/MR TERMINAL PC BOARD (NADG-4191-6)					
CIRCUIT NO.	PART NO.	DESCRIPTION	L151	232148	NMRF-7050
	IC		L152	232139	NMIF-4062
Q762	222780053	78L05	L201,L202	233355A	NMC-4059
	Transistors				Ceramic filters
Q764-Q766	221282	DTC144ES	X101,X103	3010071	SFE10.7MA5(RED)
	Diodes		X151	3010123	SFZ-450JL
D761,D762	223163 or	ISS133 or	X152	3010076	BFU-450C
D764,D765	223205	ISS270A	X104	3010158 or	XTL-7.2M
	Capacitors			3010141	
C767	354761009	10 μ F,35V,Elect.	C001,C107	354741019	100 μ F,16V,Elect.
C770	374724724	4700pF \pm 5%,50V,Plastic	C106	354784799	0.47 μ F,50V,Elect.
	Terminals		C107	354742209	22 μ F,16V,Elect.
P761	25045172	HSJ-1003-01-020	C108	354741019	100 μ F,16V,Elect.
P762	25045293	HSJ-1003-01-012	C112	354780229	2.2 μ F,50V,Elect.
	Socket		C113	354784799	0.47 μ F,50V,Elect.
P951a	25050444	NSCT-6P268	C117	374723334	0.033 μ F \pm 5%,50V,Plastic
			C118	354780229	2.2 μ F,50V,Elect.
OPERATION SWITCH PC BOARD (NASW-4192-6)					
CIRCUIT NO.	PART NO.	DESCRIPTION	C119	353782299	0.22 μ F,50V,Elect.
S719,S745	25035548	NPS-111-S510,Switches	C123	354721019	100 μ F,6.3V,Elect.
P702	25050456	NSCT-5P280,Socket	C124	354741019	100 μ F,16V,Elect.
			C154	354780479	4.7 μ F,50V,Elect.
TUNER CIRCUIT PC BOARD (NARF-4194-6)					
CIRCUIT NO.	PART NO.	DESCRIPTION	C155-C157	354761009	10 μ F,35V,Elect.
	Front end		C159	374724734	0.047 μ F \pm 5%,50V,Plastic
TU001	240088	FE337-A07	C160	374721034	0.01 μ F \pm 5%,50V,Plastic
	ICs		C161	354782299	0.22 μ F,50V,Elect.
Q104	22240039	LA1266	C201	354744719	470 μ F,16V,Elect.
Q107	22240090	LM7001	C202	354742209	22 μ F,16V,Elect.
Q201	22240242	AN7470	C205	354782299	0.22 μ F,50V,Elect.
Q208	22240247 or	BA15218N or	C206	354780109	1 μ F,50V,Elect.
	22240293	NJM4558L-D	C207	354780339	3.3 μ F,50V,Elect.
	Transistors		C208	370134714	470pF \pm 5%,100V,Plastic
Q102	2211723	2SC1923-O	C209	374724734	0.047 μ F \pm 5%,50V,Plastic
Q103,Q106	2213284	2SC1740S-R	C211,C212	374721824	1800pF \pm 5%,50V,Plastic
Q105	2212445	2SK365-GR	C213,C214	354742209	22 μ F,16V,Elect.
Q108,Q109	2213510	DTA114ES	C215,C216	354761009	10 μ F,35V,Elect.
Q202	2211945	2SK246-GR	C219,C220	374726224	6200pF \pm 5%,50V,Plastic
Q205,Q206	2212794	2SD1468-R	C221	374721034	0.01 μ F \pm 5%,50V,Plastic
Q207	2213510	DTA114ES	C222	354780229	2.2 μ F,50V,Elect.
			C223	374721024	1000pF \pm 5%,50V,Plastic
			C224	374724734	0.047 μ F \pm 5%,50V,Plastic
			C225,C226	354761009	10 μ F,35V,Elect.

NOTE: <D>: Only 120V model
<P>: Only 230V/240V models
<W>: Only Worldwide model

NOTE: THE COMPONENTS IDENTIFIED BY MARK  ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

CIRCUIT NO.	PART NO.	DESCRIPTION
		Resistors
R101	5210266	N06HR 100KBC,Semi-fixed
R102,R202	5210267	N06HR 200KBC,Semi-fixed
R201	5210261	N06HR 5KBC,Semi-fixed
		Terminal
P101	25060160	NTM-4PDMN086
		Socket
P201	25050449	NSCT-16P273
POWER SUPPLY CIRCUIT PC BOARD (NAPS-4195-6)		
CIRCUIT NO.	PART NO.	DESCRIPTION
		Transistors
Q951	221282	DTC144ES
Q952	2213650	DTD113ZS
		Diodes
D951-D954	22380032, 22380035 or 22380046	1SR139-100, GP104003E or AM01Z
D955	223163 or	ISS133 or
D995,D996	223205	ISS270A
		Power transformer
T902	2300670	 NPT-1111D
		Capacitors
C901	3500065A	 DE7150FZ103PAC400V/125V,IS
C952	354761019	100 μ F,35V,Elect.
		Resistors
R901	431523355	 3.3M Ω \pm 20%,1/2W,Solid
R951	442520824	8.2 Ω \pm 5%,1/2W,Metal oxide film
		Socket
P902	25050409	 NSCT-4P234
		Relay
RL901	25065248	 NRL-1P15A-DC12-29
		Fuse
F901	252051	 6A ST-6
		Fuseholders
F901a	250113	 SN5051
		Plug
P951	25055497	NPLG-6P472

VIDEO AND SUB AMPLIFIER PC BOARD (NAAF-4196-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
		IC
Q251	22240373	BA7625
Q571,Q572	22240467	SI-18751
		Transistors
Q252,Q253	2213354	2SA933S-R
Q573,Q574	2211732 or 2211733	2SC1845-F or 2SC1845-E
		Diodes
D251	223163 or	1SS133 or
D253,D254	223205	1SS270A
D506	223163 or	1SS133 or
D571,D572	223205	1SS270A
		Coils
L571,L572	231176	S-1.3C
		Capacitors
C251,C252	354780229	2.2 μ F,50V,Elect.
C253,C254	354724719	470 μ F,6.3V,Elect.
C255	354721019	100 μ F,6.3V,Elect.
C571,C572	354761009	10 μ F,35V,Elect.
C577,C578	354741019	100 μ F,16V,Elect.
C581,C582	374724734	0.047 μ F \pm 5%,50V,Plastic
C591,C592	354780229	2.2 μ F,50V,Elect.
		Resistors
R581,R582	442520824	8.2 Ω \pm 5%,1/2W,Metal oxide film
R583,R584	4000059	0.22 Ω ,2W,Metal plate
		Relay
RL506	25065339	NRL-2P5A-DC24-046
		Terminal
P251	25045339	NPJ-4PDYE190
		Plug
P612a	25055133	NPLG-5P117
		Sockets
JL251	25050270	NSCT-6P98
JL571	25050272	NSCT-8P100
JL572	25050267	NSCT-3P95

SCHEMATIC DIAGRAM CONNECTION DIAGRAM OF MICROPROCESSOR

4

2

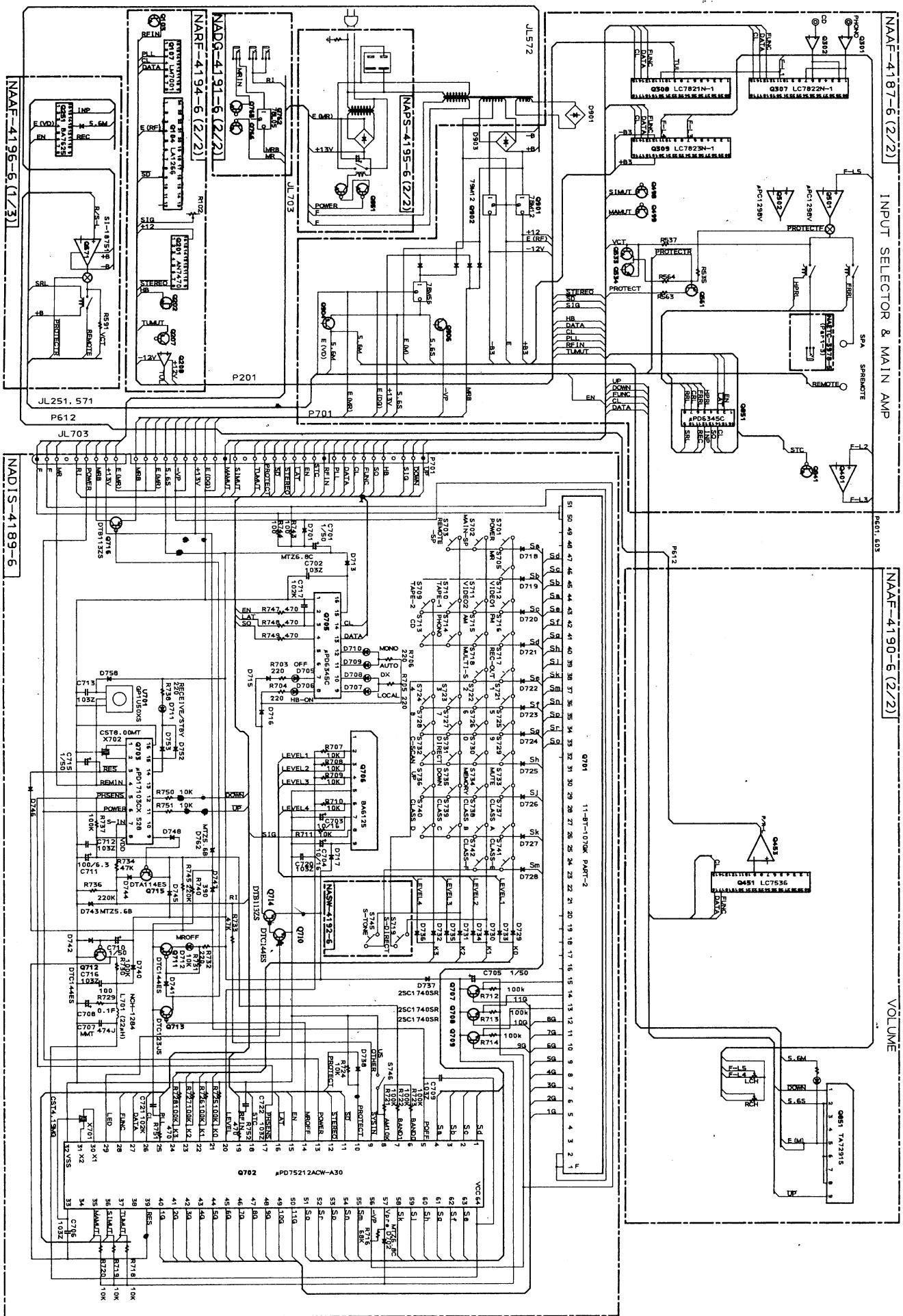
10

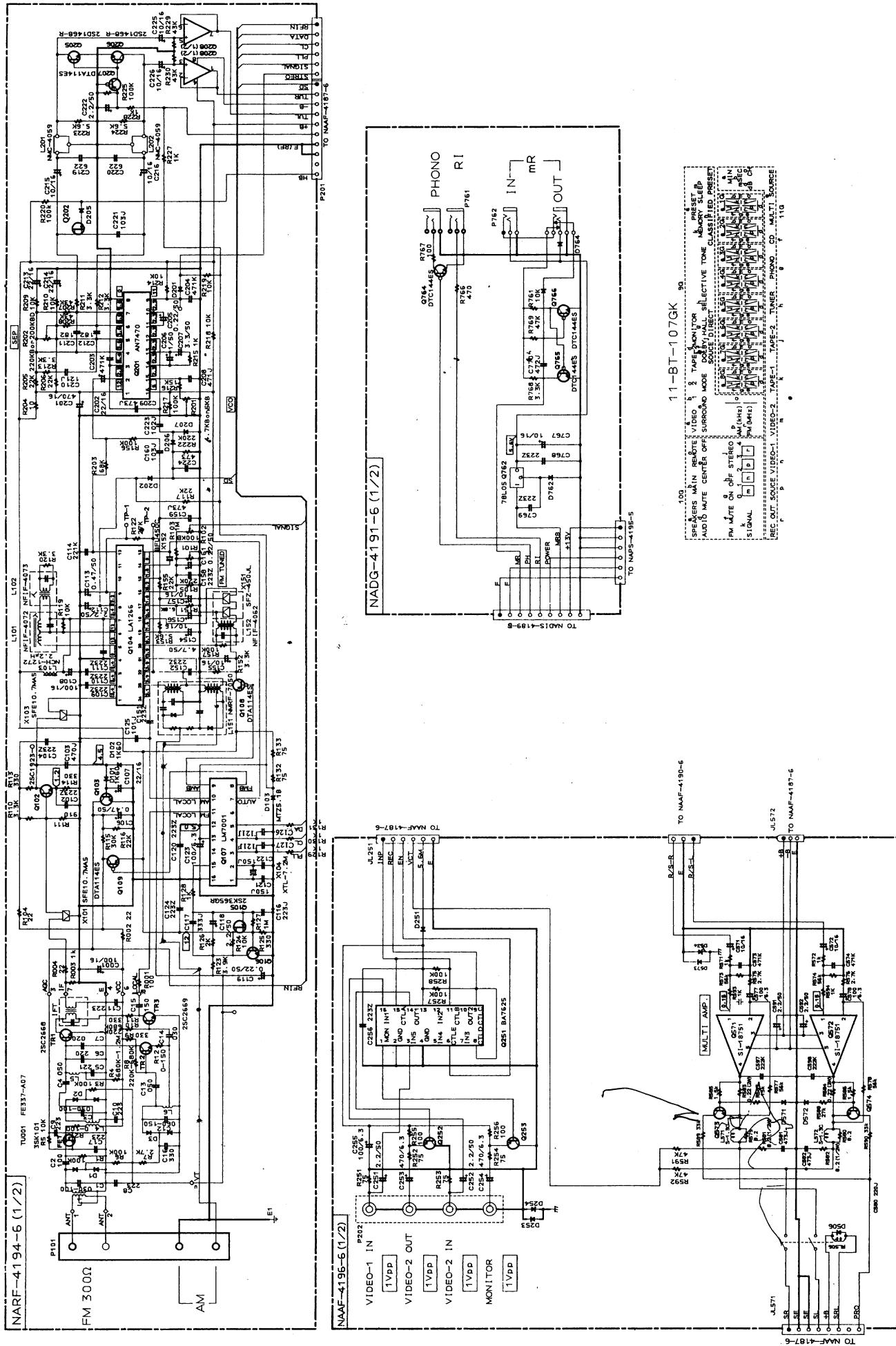
1

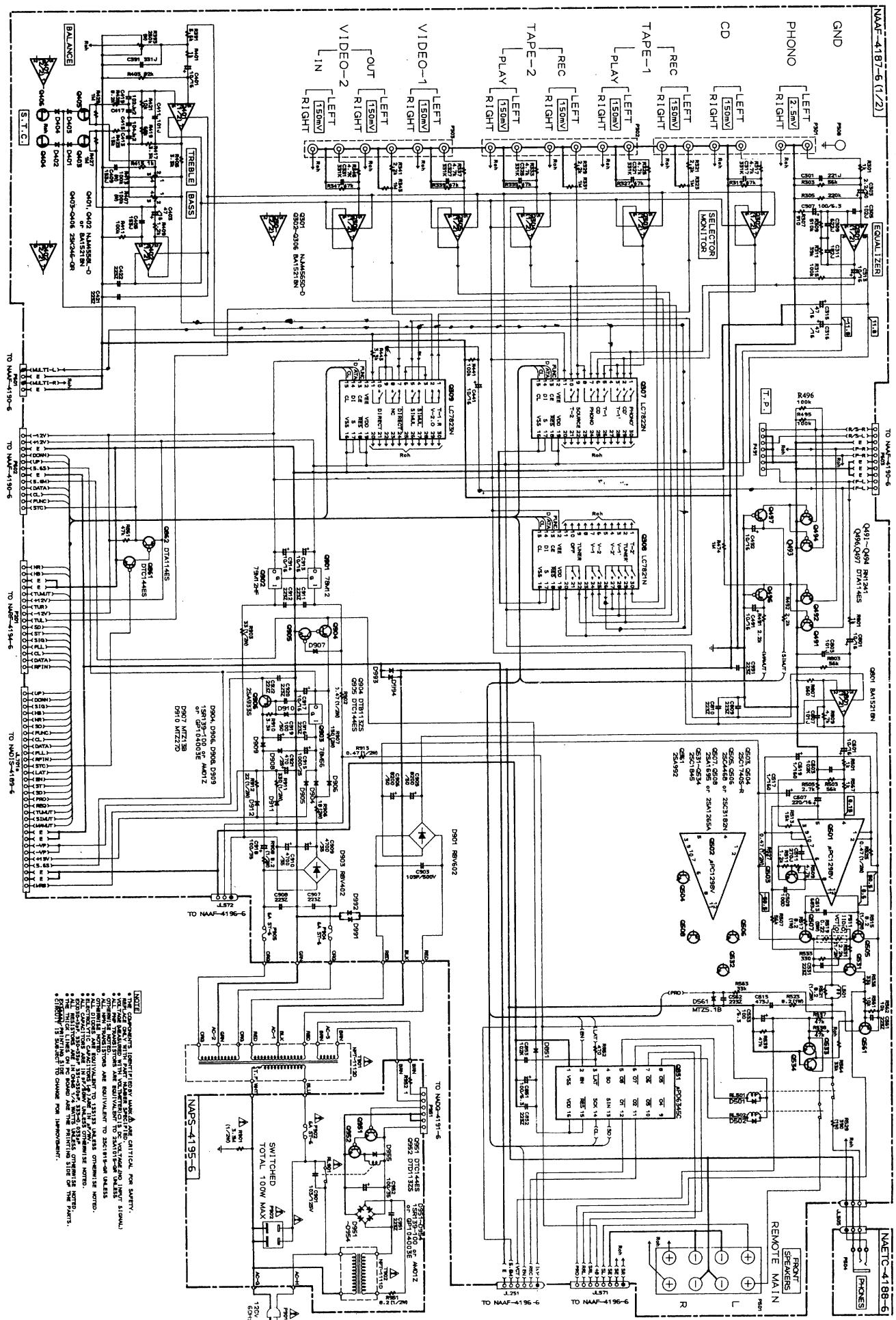
四

ת

8



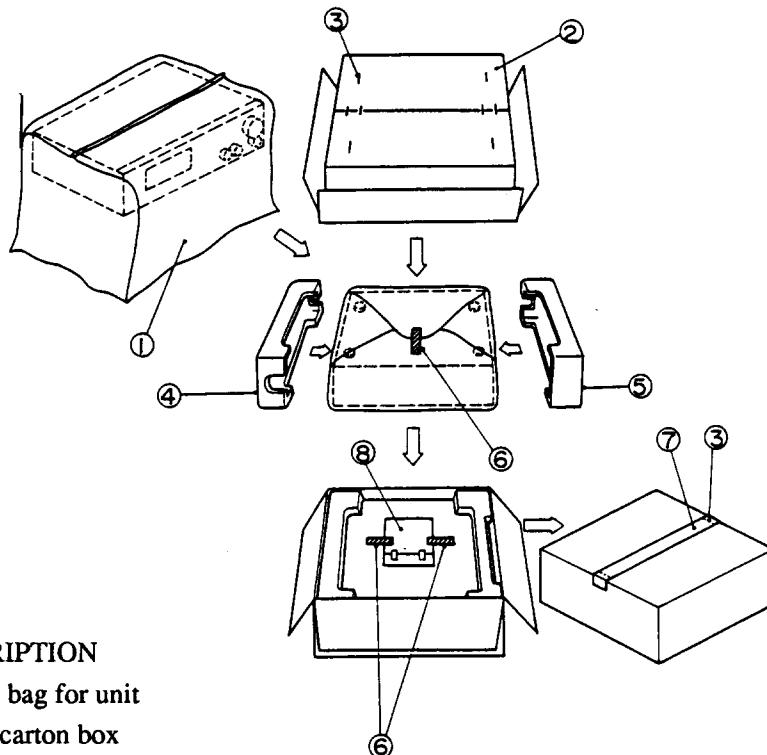




NOTE
THE COMPONENTS IDENTIFIED IN THIS SHEET ARE ADDITIONAL FOR SAFETY. THESE ARE RECOMMENDED WITH THE EQUIPMENT AS FOLLOWS: AND MAY NOT BE SIGNIFICANTLY DIFFERENT FROM THE EQUIPMENT AS SHIPPED. THE EQUIPMENT AS SHIPPED IS THE EQUIPMENT AS RECEIVED. ALL PARTS IDENTIFIED AS EQUIVALENT TO 25113 ARE EQUIVALENT TO 25113. ALL OTHERS ARE EQUIVALENT TO 25113. THIS SHEET IS FOR INFORMATION ONLY. ALL CONNECTIONS ARE IN THE NEW NAME, UNLESS OTHERWISE NOTED. ALL PARTS IDENTIFIED AS EQUIVALENT TO 25113 ARE EQUIVALENT TO 25113. THE THICK LINE ON THE PARTS ARE THE PRINTING SIDE OF THE PARTS. EQUIPMENT IS SHIPPED AS SHIPPED. NO INFORMATION.

ONKYO

PACKING VIEW



REF.NO. PART NO.

DESCRIPTION

1	29100034	Styrene bag for unit
2	29052488Y	Master carton box
3	282301	Sealing hook
4	29091449B	Pad R
5	29091448B	Pad L
6	261504	Adhesive tape
7	29110071	Damplon tape
8	Accessory bag ass'y	
	29341769	Instruction manual
	29341770	Instruction manual <C>
	292111	FM antenna
	232140	NMA-3057,AM loop antenna
	2010200	Connection cord
	3010054	UM-3,Two batteries
	24140241	RC-241C,Remote control transmitter
	29365019A	Warranty card <N>
	29358002J	Service station list <N>
	29100097	Styrene bag for accessory

NOTE: <N>:U.S.A. model
<C>:Canadian model

ONKYO CORPORATION

International Division: Onarimon Yusen Bldg., 23-5,
Nishi-Shimbashi 3-chome, Minato-ku, TOKYO 105, JAPAN
Tel: 03-3432-6987 Fax: 03-3436-6979

ONKYO U.S.A. CORPORATION
200 Williams Drive, Ramsey, N.J. 07446, U.S.A.
Tel: 201-825-7950 Fax: 201-825-8150

ONKYO EUROPE
Immeuble Le Diamant, Domaine Technologique de Saclay, 4 Rue René Razet,
91892 SACLAY, FRANCE Tel: (1) 69 33 14 15 Fax: (1) 69 41 29 66

ONKYO FRANCE
Immeuble Le Diamant, Domaine Technologique de Saclay, 4 Rue René Razet,
91892 SACLAY, FRANCE Tel: (1) 69 33 14 00 Fax: (1) 69 41 35 84